

Behavior of Brown Bears (*Ursus arctos*) in Captivity during Mating Season

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ABSTRACT From 1991 to 1992, we observed behavior of 7 brown bears (5 females, 2 males) in mating season. Results showed that the oestrus of brown bears was mainly from May to July. The oestrus of most individuals occurred at the end of May and the beginning of June. There were some differences in the oestrus among individuals. Average duration of the oestrus was 30.8 days (16-50 days). The mating behavior was mainly observed during 8.00-9.00 a.m., and 15.00-16.00 p.m.. Rest and sleep were the next behavior after mating for most bears, especially for male bears. All bears had poor appetite. The pattern and process of a successful mating was that a male bear approached a female, smelled the pudendum of the female, climbed on female hip, mated, parted and rested. Oestrus females approached males sometimes.

Key Words: Behavior, Brown bear, Mating season

Introduction

Brown bear is an endangered species. There is very low population of brown bears in the field. The artificial breeding in captivity becomes a very important approach to increase the number of bears and to recover wild bear resources. The purpose of this study is to provide basic and useful information for the successful breeding in captivity. There are some papers published about behaviors, sexual behavior and reproduction of bears (Liu Guangzhe 1992, Liu Hongxi 1992, Zhang Xingji 1992). No information is available about the mating behavior of brown bears in captivity.

Methods

We observed behavior of 7 healthy adult brown bears in the bear pit of 1100 m² on Shanhe Bear Farm, Heilongjiang Province. Different methods were used to collect behavioral data during different stages. During mating season, we mainly used: 1. Scan Sampling: we recorded behavior of all bears every 5 minutes in 24 hours a day; 2. Ad Libitum Sampling: we recorded behavior that didn't appear very often at any time. No restraints were employed in sampling behavior with this method; 3. All Occurrences: we mainly focused on one or a limited number of behaviors and recorded all occurrences like mating behavior; 4. Focal-Animal Sampling: we observed one particular individual during a special sample period. At the same time, we could also record other bears.

Table 1 The oestrus of female brown bears in captivity from 1991 to 1992

Year	No.	Beginning of Oestrus	End of Oestrus	Days	Others
1991	1002	May 2	May 29	27	
	1003	May 20	June 8	19	
	1004	May 16	June 20	35	
	1009	May 12	July 2	50	
	1002	May 5	June 8	34	unbred
1992	1004	May 15	May 31	16	
	1009	June 3	June 27	24	
	1014	April 15	May 26	41	first breeding
Mean				30.8	

Results and discussion

Oestrus of most brown bears was from the midst of April to July (Table 1). There was difference in duration among different individuals. Average duration was 30.8 days (16-50 days). In 1991, oestrus duration of all brown bears was 61 days (2 May - 2 July). In 1992, it was 73 days (15 April - 27 June). Factors affecting duration of oestrus may be bear health, age and the breeding experience etc.

According to records of oestrus of 3 females (No. 1002, 1004, 1009) in 2 years, each individual had relative fixed oestrus even though the oestrus may vary in different years. The bear No. 1014 that joined breeding first time started its oestrus earlier than others. In general, oestrus of most brown bears was observed from the

end of May to the beginning of June. There were few oestrus individuals in other times (Fig. 1). Male bears began oestrus earlier and ended later than females, generally from the beginning of April to the midst of July.

There were two peaks of mating frequency for brown bears during the day (Fig. 2). One was during 8.00-9.00 a.m., the other was from 15.00 to 16.00 p.m.. At 6.00 a.m. oestrus bears were released into pit from chambers, and back to chamber at 17.00 p.m. every day. Every morning they began to mate at 7.00 a.m. after they moved, got familiar to each other between male and female for some time. The most common behavior after mating was resting and sleeping especially for males. Some individuals had bath before resting after mating.

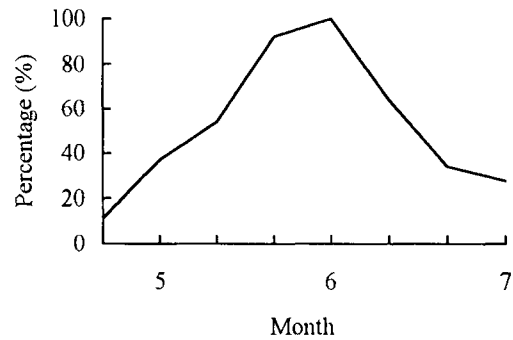


Fig. 1 Percentage of oestrus female brown bears during mating season

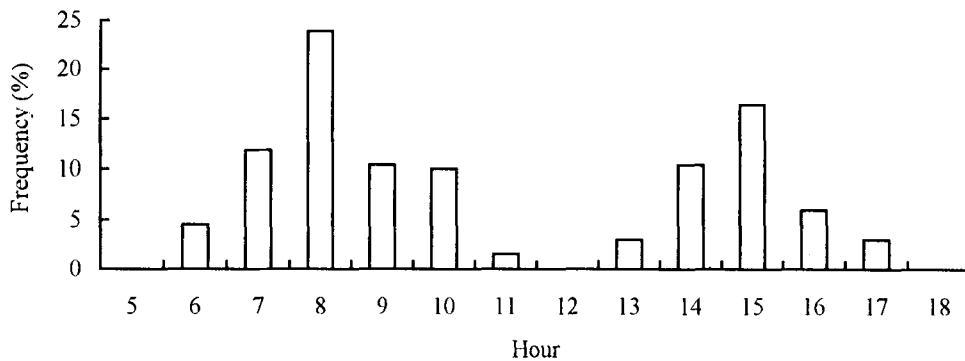


Fig. 2 The mating frequency of brown bears in mating season (time 5 presents 5.00-5.59, the same for others)

In mating season, all oestrus bears had poor appetite, especially for males. Male bears sometimes didn't eat for several days. The pattern of mating was: oestrus male bears approached female and smelled pudendum of female, climbed on female hip, mated, parted and rested. Male approached female, un-oestrus female often attacked male, but oestrus female sometimes approached male for mating.

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